UTAH GEOLOGICAL & MINERAL SURVEY

QUARTERLY REVIEW

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Highest Since '29

New Mark For Great Salt Lake

Responding to heavy mountain snow packs and an extraordinary wet, cool spring, the Great Salt Lake rose to 4,201.55 feet; its previous high water level of 4,201.35 was reached in mid-May 1974. After falling back to 4,199.35 in October 1974, the lake began rising and now stands higher than it has been since 1929.

Lake levels recorded (in feet) this spring and summer are:

	Boat harbor (south arm)	Saline (north arm)
May 15	4,201.15	4,198.90
June 1	4,201.35	4,199.05
June 15	4,201.55	4,199.15
July 1	4,201.45	4,199.10
July 15	4,201.45	4,199.15

The high is assumed to have occurred between mid-June and July 1 and was probably a little above 4,201.55.

Lake gauges are read on the first and fifteenth of each month by the U. S. Geological Survey. The south arm is gauged at the boat harbor west of Silver Sands Beach, and the north arm is measured at Saline station on the north side of the Southern Pacific causeway. It is unusual for the annual peak to be reached in late June.

The 2.4 foot disparity in elevation of the south and north arms is the greatest measured since 1959 when the railroad causeway cut the lake into two segments that are now connected by only two small culverts.

Wasatch Plateau Coal Field

UGMS DRILLS FOR COAL

The Utah Geological and Mineral Survey is currently engaged in three projects in the coal fields of the state. The principal study is a drilling program supported by a grant from the U. S. Geological Survey Conservation Division. Eight exploratory drill-sites have been chosen in the Wasatch Plateau coal field, and these will be drilled during July and August of 1975. The logs of the coreholes will be placed on open-file and made available to government agencies and for inspection by the public. Eventually the data will be published for wider dissemination.

The holes range in depth from 300 to 1,100 feet and are designed to test the coal in the lower Blackhawk Formation of the Upper Cretaceous Mesaverde Group. The coal beds will be cored and analyzed. Drillholes are sited near East Mountain, Trail Mountain, North Horn Mountain, and Johns Peak.

UGMS will also collect coal samples from areas in which mining is expected to occur in the next 10 years. In cooperation with the U. S. Geological Survey, these samples will be analyzed to include: (1) proximate analysis (percent ash, moisture, fixed carbon, and volatile matter); (2) ultimate analysis (percent carbon, hydrogen oxygen, nitrogen, and sulfur); (3) Btu determination (heat content in British thermal units); (4) sulfur analysis (percent organic sulfur, pyrite sulfur, sulfate sulfur, and total sulfur); (5) major composition of the ash of coal (percent ash, SiO_2, Al_2O_3, Na_2O,

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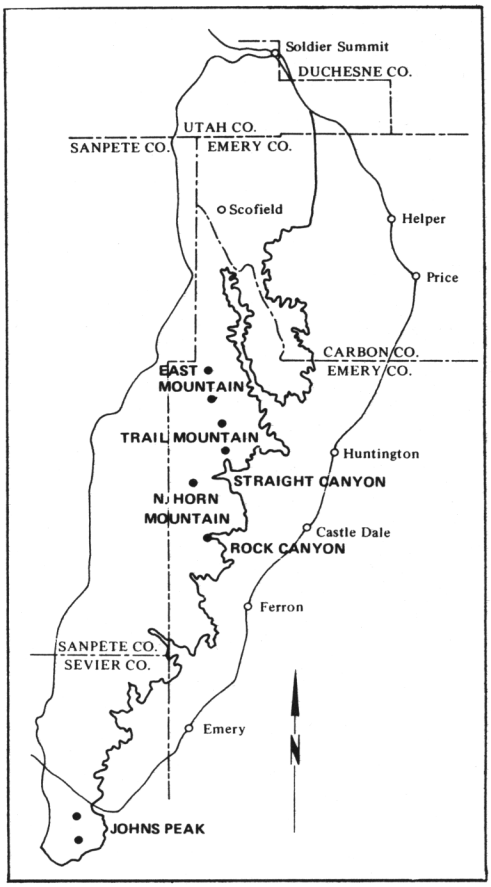
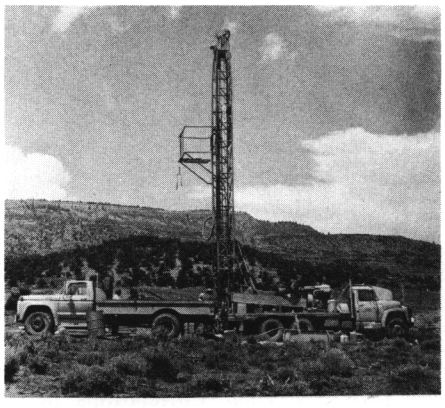


Location of areas for drilling in the Wasatch Plateau coal field. Black dots are UGMS drill-sites.



Drilling rig and equipment at site. *(UGMS photo)*

Survey Releases Latest Studies

The Utah Geological and Mineral Survey has released its latest publications through the UGMS Publication Sales Office, 104 UGS Building, University of Utah, Salt Lake City, Utah 84112. When ordering by mail, add 10% for handling and mailing charges—minimum charge is $ .25. Mailing charges may vary for maps; see listing of map for prices.

Water-Resources Bulletin 20, *Great Salt Lake, Utah: Chemical and Physical Variations of the Brine, Water-Year 1973,* by J. A. Whelan and C. A. Petersen ($2.50). Water-Resources Bulletin 20 includes 10 illustrations and 6 tables.

Circular 57, *Utah Mineral Industry Activity 1973 and 1974,* by C. H. Stowe ($ .25). Circular 57, a review of the oil and gas and mining activity in Utah, contains tabulations of mineral commodities by county. This information formerly appeared in the February and May issues of the *Quarterly Review.*

Map 36, *Energy Resources Map of Utah,* compiled from data assembled by the staff of UGMS in cooperation with the State Advisory Council on Science and Technology, the U. S. Bureau of Land Management, and the U. S. Forest Service ($3.50 over-the-counter; $4.50 mailed in tube).

Map 37, *Simple Bouguer Gravity Anomaly Map of Utah,* compiled by K. E. Cook, J. R Montgomery, J. T. Smith, and E. F. Gray ($ .50 over-the-counter; $1.50 mailed in tube).

Map 38, *Navigational Chart of the Great Salt Lake South Arm,* compiled by W. M. Katzenberger ($1.50 over-the-counter; $1.75 folded and mailed).

Reprint 99, *Oil-Impregnated Sandstone Deposits of Utah,* by J. A. Campbell (reprint free; $ .25 mailing charge). Reprinted from *Mining Engineering, Vol. 27, No. 5, May 1975.*

Utah Geology, *Vol. 2, No. 1, Spring, 1975.* Published biannually. Subscriptions are $6.00 per year. Single

(continued on page 4)

Altamont-Bluebell Field

Utah's Oil Production Near Record Level

Utah's oil production has risen to near record levels mostly as the result of high output from the Greater Altamont-Bluebell field in Duchesne County.

Utah oil production in recent years has been:

Year	Annual total (barrels)	Average per day (barrels)
1970	23,370,000	64,000
1971	23,630,000	64,700
1972	26,570,000	72,600
1973	31,080,000	85,200
1974	39,363,000	107,800

Utah's peak production was reached in 1959 when 39,959,000 barrels were produced for an average of 109,477 barrels per day. This peak came at the period of highest production from Aneth and Red Wash.

For the first four months of 1975 production levels have remained high:

1975 (month)	Monthly total (barrels)	Average per day (barrels)
January	3,375,000	108,900
February	3,139,000	112,100
March	3,472,000	112,000
April	3,345,000	111,500

If these rates are sustained, this year could set a new record for oil production in Utah.

The importance of Utah's six largest fields is shown by a breakdown of April's production data:

Field	Average per day (barrels)	Percent of total
Greater Altamont-Bluebell, Duchesne and Uintah Counties	64,675	58.0
Greater Aneth, San Juan County	22,800	20.4
Greater Red Wash, Uintah County (includes Walker Hollow and Wonsits Valley	10,425	9.3
Upper Valley, Garfield County	4,250	3.8
Lisbon, San Juan County	3,175	2.9
Bridger Lake, Summit Co.	1,450	1.3
Total of 48 other fields	4,700	4.3

In the first quarter of 1975, Texas, Louisiana, and California were the top three producing states, followed in order by Oklahoma, Wyoming, New Mexico, Alaska, Kansas, and Mississippi. Florida and Utah tied for tenth place. Texas produced almost 40 percent of the U. S. total of 8.35 million barrels daily, and the top three states accounted for 71.3 percent. Utah produced 1.3 percent of the U. S. total. The Greater Altamont-Bluebell field assumes considerable importance by producing three-fourths of one percent of the nation's crude oil.

New Staff Member Assumes Survey Post

John Wallace Gwynn has joined the UGMS staff as Chief of the Research Section. A native Salt Laker and a graduate of the University of Utah with B. S. and Ph.D. degrees, "Wally" is well acquainted with the Survey from his years of work as a summer field assistant and part-time employee while a student. His Ph.D. thesis, "Instrumental Analysis of Tars and Their Correlations in Oil-Impregnated Sandstone Beds, Uintah and Grand Counties, Utah," was published in 1971 as Special Studies 37.

Wally was employed by Phelps-Dodge, the Magnesium Division of National Lead, and Great Salt Lake Minerals and Chemical; in the last two companies he specialized in mineral extraction from the Great Salt Lake. With UGMS' Research Section Wally will be responsible primarily for the Survey's Great Salt Lake and geothermal work.

then and now ...

GSL Rises Again

The high water level of 4,201.55 feet recorded on June 15, 1975, is much less than the historic high of 4,211.6 feet that occurred in June 1873. If the lake should someday rise again to that level, the Southern Pacific Railroad and Antelope Island causeways would be completely inundated and Interstate 80 along the north side of the Oquirrh Mountains would be threatened. As it is, high water levels in the last few years have made it necessary to protect or move evaporating ponds, dikes, causeways, roadways, and beach and harbor installations.

Present research indicates that even higher lake levels probably occurred within the last few hundred years. Studies by Donald R. Currey of the Department of Geography at the University of Utah show that exceptionally fresh beaches at elevations as high as 4,219 feet may well date from a period beginning in the 16th century, when lakes and glaciers began a series of intermittent expansions in many regions of the world. These young beaches suggest that the Great Salt Lake has undergone wider variations during relatively recent times than is generally appreciated.

Will the Great Salt Lake rise again next year? And what about ten years from now? There are no sure predictions yet. The answer lies in the complex interaction of several factors including precipitation, surface-water inflow, ground-water inflow, and evaporation rates. Meanwhile, research continues.

SUMMIT COUNTY FIELD

Second Well For Pineview

Utah's newest oil-field, unofficially designated Pineview, has been extended 0.65 miles northeast with the apparent successful completion of #3-1 Union Pacific drilled by American Quasar Petroleum, Energetics Inc., and North Central Oil. The field was discovered in January 1975, and this well is the second one drilled by the three companies (see *Quarterly Review,* May 1975).

This second test has penetrated between 250 and 300 feet of potential pay sand and has yielded substantial flows of oil and gas on at least six drill stem tests. Tests have been run from about 9,840 feet to 10,295 feet total depth. The discovery well is reported to be capable of producing several hundred barrels of good quality crude oil daily from the Nugget Sandstone. Production from a sandstone in the Twin Creek Formation above the Nugget Sandstone is also indicated in the second well.

American Quasar and their partners have announced plans for a third well in the field, a 17,300 foot test of the Thaynes Formation (Triassic), in NWSW Section 3-2N-7E, Summit County. This well may be drilled beyond the proposed depth if structural conditions are found to be favorable at the 17,300 foot level. The three companies have also staked a fourth well, #35-1 Union Pacific, about 6.5 miles southwest of the discovery. This well may exceed 20,000 feet in depth. Location is in SENW Section 4-2N-7E.

Quake Bounces Water

According to *Wildlife Report* of June 23, 1975, published by the Utah Division of Wildlife Resources, the March 29, 1975, earthquake that was centered in Pocatello Valley along the Utah-Idaho boundary caused "a bounce of some 2-3 feet" in water levels in an observation well north of Locomotive Springs Waterfowl Management Area on the north end of Great Salt Lake. After the brief seismic disturbance water levels returned to normal. No disturbance of spring flow was noted.

The U. S. Geological Survey reports that observation wells in Grantsville and Lehi also recorded the "bump" but that a well at Logan was unaffected.

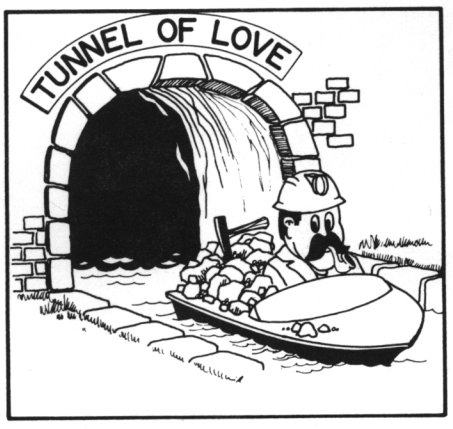
Oil Shale Experiment

A 120-acre tract of State of Utah lands in the Uinta Basin near Bonanza is the site of a proposed *in situ* experiment for extraction of oil from oil shale. The study and experiment is proposed by Western Oil Shale Corporation (Westco) with support from nine oil companies.

Plans call for mining out three chimneys at a depth near 1,000 feet and using these as underground retorts. Companies supporting Westco in the project are: Ashland, Chevron Field Research, Cities Service, Getty, Gulf, Mobil Research and Development, Shell, Standard (Indiana), and Sun.

ROCKY RIDGES

by Greg McLaughlin



COAL STUDIES

(continued from page 1)

UGMS conducts tests for methane gas in the field. The test is relatively simple: A section of coal core is inserted into a cylinder and sealed immediately after it comes out of the hole. The gas is bled off through a valve at fixed time intervals and measured. Measurement of the gas continues until the amount given off becomes negligible. The total gas produced is related to the weight of the core in the cylinder. *(UGMS photo)*

K_2O, CaO, MgO, Fe_2O_3, P_2O_5, Cl, MnO, TiO_2, and SO_3); and (6) composition of trace elements.

UGMS will also conduct tests cooperatively with the U. S. Bureau of Mines to determine the methane content of Utah coal. The data will then be used to predict if the gas content of the coal bed can be commercially produced.

UGMS welcomes invitations, by anyone drilling coal beds, to perform this test. If desired, the coal core will be returned minus, of course, the gas.

Information Specialist Appointed to Committee

Carlton H. Stowe, UGMS Information Specialist, has been appointed to the Ad Hoc Committee on BLM Lands and its parent organization, the Natural Resources Council of the Federation of Rocky Mountain States. The Natural Resources Council concerns itself with the orderly development of natural resources–land, energy, minerals, and forests–in the mountain region.

Stowe's appointment is effective until December 31, 1975.

LATEST STUDIES

(continued from page 2)

issues are $3.50. Reprints of any article are $1.50 each. This issue includes papers on the "Paleocurrent Analysis and Orientation of Sandstone Bodies in the Duchesne River Formation (Eocene-Oligocene?), Northern Uinta Basin, Northeastern Utah" by M. Dane Picard and David W. Andersen; "Reconnaissance Study of the Stateline Mining District, Iron County, Utah" by Kenneth C. Thomson and Lee I. Perry; "Mid-Tertiary Volcanic Stratigraphy, Sevier-Cove Fort Area, Central Utah" by Charles F. Caskey and Ralph T. Shuey; "The Chinese Wax Mine: A Unique Oil-Impregnated Rock Deposit" by Howard R. Ritzma; "Primary and Secondary Sedimentary Structures in Oil Shale and Other Fine-grained Rocks, Green River Formation (Eocene), Utah and Colorado" by Rex D. Cole and M. Dane Picard; "Great Salt Lake–An Overview of a Brine Resource" by J. A. Whelan; "Provisional Rb/Sr Age of the Precambrian Uinta Mountain Group, Northeastern Utah" by M. D. Crittenden, Jr. and Z. E. Peterman; "Largest Known Landslide of Its Type in the United States–A Failure by Lateral Spreading in Davis County, Utah" by Richard Van Horn; and "Earthquake Epicenters, January-June 1974" by Kenneth L. Cook and Frank J. Hamtak.

Oil and Gas Field Studies, by P. R. Peterson. All thirteen Field Studies may be ordered now for $10.00/set, a savings of $7.00 over individual prices.

The new *List of Available Publications–June 1975* is yours for the asking. Write for a free copy. No mailing charge.

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QUARTERLY REVIEW

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